NAVAL WAR COLLEGE
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MAINTAINING CIVIL RESERVE AIR FLEET PARTICIPATION

by

Carl D. Evans

Major, USAF

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: Carl D. Evans

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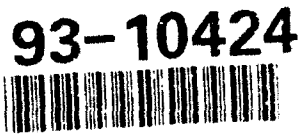

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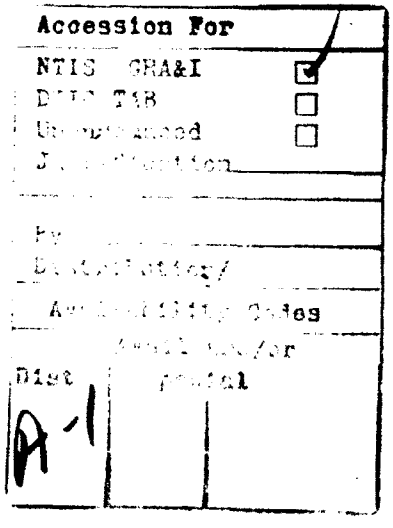

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CHAPTER I: INTRODUCTION

"Regional focus, flexible/adaptive planning, and reduced forward presence have all combined to significantly increase our reliance on strategic mobility. The United States requires sufficient strategic mobility to rapidly deploy and sustain overwhelming combat power in any region where US national interests are threatened. Prepositioned materiel, either ashore or afloat, can contribute to strategic mobility by reducing the requirements for early heavy lift at the time of crisis. Any weak link along this complex chain can disrupt or even halt a deployment."[1]

National Military Strategy of the United States

The current National Military Strategy requires the United States to be prepared to move combat forces, equipment, and supplies anywhere in the world to respond to crises that threaten our national interests. The Commander-in-Chief (CINC) of the United States Transportation Command (USTRANSCOM) is responsible for meeting the strategic mobility requirements of the warfighting CINCs across the spectrum of conflict. As the Department of Defense (DoD) downsizes the military and reduces overseas military forces to meet the post-Cold War threat, strategic mobility will play an ever-increasing role as a key supporting element of the National Security Strategy of the United States. The Civil Reserve Air Fleet (CRAF) is a crucial component of our strategic mobility capability. The CRAF provides USTRANSCOM the operational flexibility and surge capability necessary when DoD's organic airlift assets are no longer capable of meeting the requirements of a warfighting CINC.

The reduction in forward-deployed forces will increase the warfighting CINCs reliance on strategic mobility. Without CRAF participation, the United States' ability to project combat forces

worldwide would be significantly degraded. Future CRAF participation is currently threatened by several factors brought to the forefront by the first-ever activation during OPERATION DESERT SHIELD/DESERT STORM.

This paper will examine the background and composition of the CRAF, its contribution in meeting wartime strategic airlift requirements, problems currently facing the CRAF program, possible ways to maintain CRAF participation, and the impact of a loss of CRAF capability on the warfighting CINCs using OPERATION DESERT SHIELD/DESERT STORM as an example.

CHAPTER II: BACKGROUND

Strategic Mobility and the Mobility Triad

Strategic mobility is the ability to move military forces in a timely manner from one continent, or theater of operations, to another. It represents the total capability of a nation to project military forces outside its own boundaries to protect or secure vital national interests abroad. Strategic mobility permits the movement of military forces and their sustaining supplies from the continental United States to any theater in support of a warfighting CINC.

Our nation's strategic mobility is based on the concept of a mobility triad consisting of three interdependent components: strategic sealift, prepositioning, and strategic airlift. Each component provides unique capabilities and is subject to certain limitations. In order to achieve its national defense objectives, the United States must be able to deploy to overseas locations quickly with a credible force, and be able to sustain these forces until the objectives have been achieved. All three elements of the mobility triad are essential.

In terms of our total capability, sealift is the backbone of strategic mobility. Sealift permits military forces to conduct sustained operations abroad. The vast majority of military equipment, follow-on forces, and sustaining supplies must move by sea. In any major overseas deployment, 95% of our dry cargo and 99% of our fuel will move by sealift.[1] Although sealift provides the lion's share of our strategic lift capability, it takes 2-3 weeks for ships to load, transport, and unload cargo at a foreign port.

The second leg of the mobility triad is prepositioning--the storage of military equipment, supplies, ammunition, and rations in strategic locations throughout the world. Prepositioning can either be afloat on ships, or ashore in storage areas. Prepositioning increases readiness by reducing requirements for rapid deployment airlift and sealift. In order for prepositioning to be effective, combat units must be deployed rapidly and "married up" with their prepositioned equipment.

The final leg of the mobility triad is strategic airlift. Strategic airlift provides the United States with the ability to move military forces rapidly throughout the world to show resolve or honor commitments. During the first few weeks of any conflict, it is our primary means of deploying forces and equipment to the battlefield. Strategic airlift provides the speed and agility necessary to rapidly respond to a wide array of conditions worldwide.

The United States' strategic airlift capability is composed of both military and commercial aircraft. The organic military fleet consists of C-5A/Bs, C-141s, and KC-10s under the operational control of USTRANSCOM. The commercial segment of strategic airlift is embodied in the CRAF which is a <u>voluntary</u> program whereby commercial air carriers agree to provide aircraft, aircrews, and ground support equipment/personnel to support military operations during shortages of organic military airlift. The CRAF provides USTRANSCOM the operational flexibility to expand beyond the organic strategic airlift capacity during crises, contingencies, or war.

Origins of the CRAF

The military first began working with commercial air carriers during World War II. The fledgling Air Corps Ferrying Command (now known as Air Mobility Command) could not meet wartime airlift demands as the United States entered World War II. To offset this shortage, the commercial airlines flew several hundred missions throughout the war. Commercial transports also flew numerous sorties in support of the Berlin Airlift in 1948-49.[2]

These early experiences clearly indicated the United States' organic military airlift aircraft were not capable of meeting the ever-growing airlift requirements. In 1951, President Truman issued Executive Order 10219 which directed DoD and the Department of Commerce (DoC) to jointly develop a plan to utilize civil aircraft in times of crisis. In December 1951, a Memorandum of Understanding was signed between DoD and DoC marking the official beginning of the CRAF.[3] As a result, DoD developed emergency plans to augment military airlift with civil air. An unclassified version of this plan was printed on 20 March 1952, marking the official beginning of the civil-military airlift partnership that still serves as the basis of the CRAF today.[4] The original CRAF consisted of only 60 civil aircraft.[5] The responsibilities originally assigned to DoC were later transferred to the Department of Transportation (DoT).

National Airlift Policy

Strategic mobility emerged as a critical component of the defense policy of the United States. However, the United States recognized it could not afford to maintain an organic military airlift fleet in

peacetime large enough to meet all wartime airlift requirements. This dilemma resulted in the formation of a national policy that relied on the United States' commercial airline industry making their aircraft available to DoD during contingencies, crises, or war.

The partnership between DoD and the civil air carriers averted growing concern among the airlines that they would be "nationalized" during future wars. DoD also began to realize the need to maintain a strong commercial airline industry in peacetime so that it would be available to augment military airlift aircraft during wartime. Civil air carriers began to recognize that airlifting military equipment and personnel could be a significant source of income.[6] Since DoD's airlift aircraft were capable of carrying sizeable amounts of passengers and cargo in peacetime as well as wartime, the airline industry became increasingly concerned they would lose business to the military.

In the late 1950s, these growing concerns over potential competition between the military and civilian sectors prompted the House Subcommittee on Military Operations, chaired by Congressman Chet Holifield, to convene a series of hearings. The charter of the Holifield Subcommittee was to "investigate the 'doctrinal debate' between the airlines and the Air Force on the best methodology of utilizing and integrating commercial airline and Air Force assets."[7] These hearings resulted in a Congressionally-directed policy that diverted a portion of all military cargo and passenger business to commercial carriers, even if the military transports had to fly empty on the same routes.[8]

In 1960, President Eisenhower further strengthened the relationship between DoD and the civil air sector. He sent a memorandum to DoD (known as the Presidentially Approved Courses of Action) that specified maximum reliance on the civil airlift where appropriate.[9] These actions were designed to ensure a strong commercial airline industry capable of rapid response in support of military deployments during national crises.[10]

On 24 June 1987, President Reagan issued National Security Decision Directive Number 280 (NSDD 280), a revised statement of the National Airlift Policy (See Appendix 1). NSDD 280 is the cornerstone of the current CRAF program. It emphasizes the need to maintain viable organic and civil airlift fleets that work together in peacetime and wartime. It specifically prohibits the military from directly competing with the airline industry, thus generating DoD passenger/cargo business for the civilian airline industry as an incentive for voluntary participation in the CRAF.

CHAPTER III: ORGANIZATION AND COMPOSITION OF THE CRAF

There is no legislative or statutory requirement for commercial air carriers to participate in the CRAF. The entire CRAF program is based on voluntary cooperation between the airline industry and DoD.[1]

In order for carriers to participate in the CRAF they have to meet detailed eligibility requirements based on minimum aircraft performance characteristics, aircraft configuration, and minimum cockpit crew to aircraft ratios. These requirements are summarized in Appendix 2.

Since one of the goals of the National Airlift Policy is to maintain a viable US commercial airline industry, only US-registered civil transport aircraft are permitted to participate in the CRAF.[2] The exact size and composition of the CRAF varies from month to month. At present, the CRAF consists of 475 aircraft from 30 different airlines (See Appendix 3).[3]

Segments of the CRAF

Aircraft participating in the CRAF are organized into five segments: Domestic, Alaskan, Aeromedical, Short-Range International, and Long-Range International. These segments are based on aircraft operating characteristics and the ability to meet specific airlift requirements.[4]

The Domestic Segment supports DoD supply distribution and logistics requirements of the Navy within the United States. It is the smallest segment, consisting of only 7 Lockheed L-100 cargo aircraft.[5]

The Alaskan Segment supports the 11th Air Force's cargo requirements in Alaska. It currently consists of 12 cargo aircraft including Lockheed L-188s, Boeing B-737s, and Douglas DC-6s.[6]

The newest component of the CRAF is the Aeromedical Segment. During peacetime, overwater aeromedical evacuation requirements are normally met with the organic C-141 fleet. The aeromedical segment was designed to supplement the organic fleet to provide global aeromedical evacuation capability. The aeromedical segment consists of 13 Boeing B-767s.[7]

The Short-Range International (SRI) Segment supports short-haul cargo and passenger operations from the continental US to near offshore locations and for theater airlift requirements within specific geographic areas. It is currently composed of a mix of 33 Boeing B-727 and Douglas DC-9 passenger and cargo aircraft.[8]

By far, the largest and most crucial component of the CRAF is the Long-Range International (LRI) Segment. The primary purpose of the LRI segment is to augment the military's organic airlift fleet. Aircraft in this segment must have the range and equipment required for extended overwater operations. The LRI segment currently consists of 262 passenger and 148 cargo aircraft from 23 different carriers (see Appendix 4). It contains a mix of Boeing B-707s, B-767s, and B-747s; Douglas DC-8s and DC-10s; Lockheed L-1011s; McDonnell-Douglas MD-11s; and Airbus A-310s.[9]

Stages of Activation

The CRAF is divided into three stages to allow for incremental activation during emergencies when strategic airlift requirements exceed organic airlift capability. Each stage includes all of the aircraft of the previous stage. During an escalating crisis, the CRAF stages may be activated sequentially. During a national emergency or general war, the

entire CRAF could be activated simultaneously. The procedures for activating the CRAF were defined in 1963 under Executive Order 11090 authored by the Secretaries of Defense and Transportation.[10]

Stage I - Committed Expansion. This stage can be activated by CINCTRANS (with the approval of the Secretary of Defense) anytime strategic airlift requirements exceed the capability of the organic airlift fleet and commercial contract airlift. The commercial aircraft committed to Stage I must be ready to respond within 24 hours of activation.[11] Activation of Stage I provides a total of 60 aircraft from the long-range international segment. This represents approximately 14 percent of the passenger and 24 percent of the cargo capability of the CRAF.[12]

Stage II - Defense Airlift Emergency. The Secretary of Defense activates Stage II in support of a major airlift contingency not warranting full mobilization or declaration of a national emergency. As with Stage I, aircraft committed to Stage II must be able to respond within 24 hours (except for aeromedical aircraft which have 48 hours to respond). Stage II activation provides 215 aircraft with participants from all five segments.[13] This stage represents 36 percent of passenger and 57 percent of the cargo capability of the CRAF.[14]

Stage III - National Emergency. Stage III is activated by the Secretary of Defense after a defense-oriented national emergency has been declared by either the President or Congress. This stage represents the total capability of CRAF with all 475 aircraft ready for missions within 48 hours.[15]

Upon activation of any stage of the CRAF, total or partial capability of the respective stage may be activated, depending upon airlift requirements. Within a stage, the passenger or cargo sections can be activated independently, or specific CRAF aircraft can be selected for activation.[16] Appendix 5 contains a chart depicting the number of aircraft currently participating in each stage and segment of the CRAF.

When fully mobilized, 25 percent of the United States' long-range international airlift comes from the active fleet, 25 percent from the Air National Guard/Air Force Reserve fleet, and the remaining 50 percent comes from the CRAF.[17] The CRAF represents 32 percent of the long-range international cargo capability and 93 percent of the long-range international passenger lift available to DoD.[18] Theater CINCs are heavily dependent on the CRAF to move the forces they require to fight a major regional contingency.

CHAPTER IV: PEACETIME CRAF INCENTIVES

The partnership that has existed between DoD and the commercial airline industry provides tremendous benefits to both parties. The National Airlift Policy directs DoD to maintain an organic fleet of military airlift aircraft and operate them at the minimum utilization rate required during peacetime to keep the military aircrews proficient. It also requires DoD to utilize civilian air carriers participating in the CRAF to the maximum extent possible during peacetime.

At first glance, it may appear illogical for DoD to pay the airlines to carry personnel and equipment that could be transported on military aircraft. As mentioned earlier, this policy is based on the need to keep the civilian airline industry healthy in peacetime so that they will be available to augment the military airlift aircraft during crises, contingencies, or war.

The logic in this relationship can be made clearer by examining the monetary value of the LRI segment to DoD. There are over 400 civilian aircraft participating in the LRI segment. DoD estimates it would cost more than $10 billion dollars in life-cycle cost to replace these civilian aircraft with military airlift aircraft. This estimate does not include the cost of military aircrews and annual operating costs.[1] By relying on the commercial sector to augment military airlift, DoD is able to avoid the prohibitively high cost of maintaining and operating enough organic aircraft and aircrews during peacetime to meet wartime needs.

The CRAF partnership benefits both DoD and commercial air carriers. DoD is guaranteed a reserve fleet of aircraft to meet wartime

requirements, and the airline industry earns revenue in peacetime for international movement of DoD cargo and passengers.

Mobilization Value

Carriers may volunteer aircraft to participate in all stages of the CRAF. Each subsequent stage of the CRAF includes all of the aircraft in the previous stage plus any additional aircraft committed by the carrier. For example, if a carrier commits an aircraft to Stage I, it is also included in Stages II and III. Carriers may commit different numbers of aircraft to each segment.

The amount of peacetime DoD passenger and cargo business these carriers receive is tied directly to the their level of commitment to the CRAF. Carriers earn entitlement to peacetime airlift business only by volunteering aircraft for Stages I and II of the CRAF; this includes passenger as well as cargo business.

Air Mobility Command (AMC), the Air Force component of USTRANSCOM, manages the CRAF program. Each aircraft acceptable to the CRAF has a certain value to the CRAF program; AMC computes each aircraft's contribution based on mobilization value. The mobilization value is a numerical figure directly related to the tons of cargo or numbers of passengers an aircraft is capable of moving a prescribed distance. Cargo aircraft receive a higher mobilization value than passenger aircraft.[2] The more aircraft a carrier volunteers to Stages I and II, the more points they earn, which entitles them to more peacetime business.

Some carriers only want to volunteer their aircraft for Stage III. Their desire to participate is generally viewed more as a patriotic

gesture than as a desire to receive financial incentives. While these aircraft do not earn any guaranteed peacetime business entitlements, they are eligible for overflow business that the Stage I and II carriers are unable to provide.

The mobilization value allocates peacetime business to the commercial carriers based on the carriers' overall value to the CRAF. As a result of the National Airlift Policy and the shortage of organic military airlift aircraft, DoD is required to purchase commercial airlift augmentation during peacetime. Consequently, the CRAF enjoys a cost-free status. The government pays no additional money to CRAF participants for being in the CRAF. It simply ties the amount of business a carrier receives to their willingness to participate in the CRAF.[3]

CHAPTER V: CRAF CONTRIBUTION TO OPERATION DESERT SHIELD/DESERT STORM

Background

On 2 August 1990, Iraq invaded Kuwait. This prompted President Bush to direct a massive deployment of US military forces to Southwest Asia to remove the Iraqi forces from Kuwait, protect Saudi Arabia from an Iraqi invasion, and restore Kuwait's legitimate government.

OPERATION DESERT SHIELD--the deployment of military units to Saudi Arabia--began on 7 August 1990. Airlift requirements surged dramatically and some civil carriers immediately volunteered aircraft and aircrews to assist in the deployment. By the middle of August, nearly all of the organic airlift fleet--95 percent of the C-5s and 90 percent of the C-141s--were dedicated to the deployment. The remainder of the military cargo aircraft were fulfilling urgent airlift requirements in other parts of the world. Commercial air carriers volunteered 30 aircraft and flew more than 100 cargo and passenger airlift missions during the first 10 days of the crisis.[1]

Part of the reason the airlines were so eager to volunteer their services was to hopefully preclude activation of the CRAF during the peak of the summer travel season. Carriers with CRAF commitments preferred to voluntarily provide aircraft and aircrews to support the deployment rather than having their normal operations disrupted by a mandatory call-up of their resources.[2]

CRAF Activation

According to General H. T. Johnson, CINCTRANS, "Desert Shield was the most intensive airlift effort ever undertaken, and the magnitude of

airlift requirements quickly exceeded organic and volunteer charter capabilities."[3] On 18 August 1990, he activated Stage I of the CRAF. This event marked the first time in history that any segment of the CRAF had ever been activated.

Stage I activation provided USTRANSCOM with 17 LRI passenger aircraft and 21 LRI cargo aircraft. In addition to these aircraft, volunteers provided 15 LRI passenger and 15 LRI cargo aircraft. This placed a total of 68 LRI aircraft at USTRANSCOM's disposal.[4]

On 21 November 1990, President Bush decided to deploy an additional 250,000 troops to the Persian Gulf to provide an offensive capability for driving the Iraqi forces out of Kuwait. This decision created another enormous airlift requirement that kept both the organic fleet and Stage I CRAF aircraft operating near maximum capability.

The coalition air campaign began on 16 January 1991. Secretary of Defense Chaney immediately declared an airlift emergency and activated Stage II of the CRAF.[5] Since the troop deployments had already been completed, this decision was primarily based on the requirement for more cargo aircraft. Airlift planners were primarily interested in the 17 additional long-range international cargo aircraft available from Stage II.[6]

CRAF Stages I and II remained active throughout the war and well into the redeployment phase. Stage II was deactivated on 17 May 1991. One week later, on 24 May 1991, CINCMAC deactivated Stage I.[7] From initial activation on 18 August 1990 through final deactivation on 24 May 1991, a total of 790,000 troops and nearly 700,000 tons of cargo were moved by the combined military and commercial aircraft.[8]

Commercial air carriers (CRAF and volunteers) flew more than 5,400 missions.[9] This represents approximately 20 percent of the strategic airlift missions flown to and from the Persian Gulf area.[10]

CRAF'S Contribution

During the 202 days between the beginning of the initial deployment on 7 August 1990 and the beginning of the ground campaign, military and civilian aircraft delivered more than 478,000 troops and 499,000 tons of cargo in support of OPERATION DESERT SHIELD/DESERT STORM.[11] The operational tempo of the deployment was unprecedented. At the height of airlift deployment, there were 127 planes landing in Southwest Asia each day around the clock at an average interval of one aircraft arrival every 11 minutes![12]

During the deployment phase alone, the 26 commercial airlines participating provided as many as 70 wide-body aircraft at a time in support of OPERATION DESERT SHIELD. During this phase, a total of 306,000 troops and 134,000 tons of cargo were transported by these CRAF carriers. This represents 64 percent of the total passengers and 27 percent of the total cargo transported from the United States and Europe to Saudi Arabia.[13]

The CRAF was equally important during the redeployment phase following the successful completion of the ground campaign. During the redeployment phase, CRAF was responsible for returning 87 percent of the passengers and 43 percent of the cargo from Saudi Arabia.[14]

The first activation of the CRAF was a success. The deployment timetable required for OPERATION DESERT SHIELD/DESERT STORM could not have been achieved without the civil carriers' participation.

Commercial carriers provided more aircraft than were actually needed and played a crucial role in meeting the initial force closure and reinforcement requirements for OPERATION DESERT SHIELD/DESERT STORM.[15]

Overall, CRAF activation did not produce a major negative impact on the civil air carriers. The impact of Stage I activation on airline operations was minimal. However, the activation of Stage II did begin to impact some of the companies operating cargo aircraft even though only about 30 percent of the Stage II aircraft were actually used. Aviation industry experts estimate that Stage III activation would have virtually halted commercial cargo service since it would have removed nearly every wide-body cargo aircraft in the US fleet.[16]

Assessing the CRAF's Contribution

One method of assessing the CRAF's contribution to OPERATION DESERT SHIELD/DESERT STORM is to calculate the additional sorties and days that would have been required to complete the deployment and redeployment using only military airlift. Air Force Pamphlet 76-2, Airlift Planning Factors, provides a method for computing a rough estimate of the amount of military airlift sorties required and the period of time required to move a specified quantity of passengers and cargo over a fixed distance.[17] The computations used to figure the additional sorties and days are shown in Appendix 6.

During OPERATION DESERT SHIELD, 95 percent of the C-5 fleet and 90 percent of the C-141 fleet were committed to the deployment. Applying these percentages to a fleet of 126 C-5s and 234 C-141s, there were approximately 120 C-5s and 210 C-141s dedicated to the deployment. Since each C-5 can carry roughly the same amount of cargo and passengers

as 3 C-141s. the combined C-141/C-5 fleet can be expressed in terms of C-141 equivalents. Therefore, a total of 570 C-141 equivalents were available.

Over a period of time, an aircraft can only sustain a certain amount of flying hours per day because of required maintenance and inspections. This is known as the aircraft's sustained utilization rate. The C-5 and C-141 sustained utilization rate is 10 hours of flying time per day.[18]

It takes approximately 42.5 hours for an aircraft to complete a round trip from the east coast of the United States to Saudi Arabia. This period of time, known as cycle time, includes flight time as well as the ground time required for refueling and onloading/offloading cargo and passengers.[19]

Based on a cycle time of approximately 42.5 hours and a utilization rate of 10 hours per day, 177 C-141 equivalent sorties per day of cargo and passengers would be delivered to Saudi Arabia.

As stated earlier, commercial air carriers transported 306,000 troops and 134,000 tons of cargo during the deployment prior to the beginning of OPERATION DESERT STORM.[20] Without commercial augmentation from the CRAF carriers, an additional 7726 C-141 equivalent sorties would have been required. This would have added 44 days to the deployment phase.

Using the same methodology for the redeployment phase, it would have taken an additional 13,078 C-141 equivalent sorties to bring our troops and equipment back from Southwest Asia. This would have required 74 additional days.

The CRAF was a decisive factor in the successful deployment, resupply, and redeployment required to support OPERATION DESERT SHIELD/DESERT STORM. The initial closure requirements for the deployment phase were driven by the United Nations' deadline for Iraq to withdraw from Kuwait by 15 January 1991. If the deployment had been accomplished using only organic military aircraft, all of the forces needed for OPERATION DESERT STORM would not have been in place until early March 1991. Also, United States' soldiers would have spent up to two and one-half additional months in Southwest Asia before returning home, or would have been required to redeploy to the United States via sealift.

CHAPTER VI: RECENT CHANGES IN THE CRAF

Although the CRAF performed superbly during OPERATION DESERT SHIELD/DESERT STORM, its activation highlighted several changes that needed to be made so that the CRAF will be more capable of meeting the future needs of both the warfighting CINCs and the participating commercial air carriers. Most of the key lessons-learned centered around the structure and aircraft mix in the various stages of the CRAF. Another major area of concern (especially among CRAF carriers) dealt with aircraft being called to service and then being underutilized by USTRANSCOM.

Stages Restructured

One of the first problems identified was a critical shortage of cargo capacity, especially in Stages I and II. At the beginning of OPERATION DESERT SHIELD, CRAF Stage I consisted of 17 passenger aircraft and 21 cargo aircraft. This represented less than 3 percent of the CRAF's total passenger capacity and less than 8 percent of the cargo capacity.[1] Under Stage II activation, up to 181 aircraft could be requisitioned, including 23 LRI cargo aircraft and 18 LRI passenger aircraft. The decision to activate Stage II was driven primarily by the need to acquire additional cargo capacity.[2]

In order to correct this problem, AMC recently restructured the LRI cargo/passenger aircraft mix by shifting additional LRI cargo aircraft into Stages I and II. These changes became effective on 1 January 1993. Stage I now consists of 30 LRI cargo and 30 LRI passenger aircraft. The LRI segment of Stage II now consists of 75 cargo and 75 passenger aircraft.[3]

Another issue centered around the new aeromedical segment of the CRAF. At the beginning of OPERATION DESERT SHIELD/DESERT STORM, all of the CRAF's aeromedical capability was organized into Stage III.[4] Without activation of Stage III, none of the CRAF's aeromedical capability was available to support the warfighting CINC. To correct this discrepancy, AMC has now moved the entire aeromedical segment into Stage II. At present, there are 13 Boeing 767s in the aeromedical segment.[5]

Activation/Release Procedures Refined

Many carriers complained that they were underutilized after they had been activated. If DoD activates aircraft and then lets them stand idle or underutilizes them, the carriers begin to lose revenue. From the carriers' point of view, these aircraft could have been flying revenue-generating missions if not needed by USTRANSCOM. The airlines prefer to have their aircraft performing specific tasks for a specific period of time.[6]

During periods of activation, CRAF carriers are paid for the cargo and passengers they transport. In order to support their CRAF commitments, they must take aircraft off of their daily flight schedule. Carriers expect DoD to efficiently use the aircraft once they are activated. Since CRAF participation is voluntary, underutilization can produce a financial disincentive that may cause carriers to reevaluate their decision to participate in the CRAF.

During OPERATION DESERT SHIELD/DESERT STORM, several airline officials felt that their participation occurred in peaks and valleys. Some carriers complained their aircraft sat idle on the ramp waiting for

taskings.[7] As a result, several changes have now been made to the CRAF activation/release procedures to allow greater operational flexibility for both the carriers and USTRANSCOM.

Carriers with aircraft called up will now be guaranteed an average utilization rate of 8 hours per day for the duration of the call up or a minimum of 30 days, whichever is longer. At least 15 days advance notification will be given to the carrier by AMC before the aircraft are released from CRAF service.[8]

The release procedures have also been refined for periods when only part of a stage or segment is activated. Carriers with aircraft not called up within 72 hours of activation will be released so that their aircraft can be used for regularly scheduled airline missions. If AMC later decides they need these additional aircraft, a minimum of 5 days notice will be given to the carrier.[9]

These actions to "fine-tune" the CRAF will provide greater cargo capability to the warfighting CINCs during Stage I and II activation. It will also give CINCTRANS more flexibility in balancing the needs of the warfighting CINCs against the concerns of the participating carriers. From the point of view of the carriers, it guarantees them a minimum amount of DoD business when they are activated, while also allowing them to use aircraft committed to the CRAF when they are not needed by DoD.

CHAPTER VII: ISSUES THREATENING FUTURE CRAF PARTICIPATION

CRAF existed on paper for 38 years without being exercised or activated. During this period, DoD and the CRAF carriers enjoyed a symbiotic relationship. DoD was able to maintain a readily accessible source of strategic airlift aircraft and the CRAF carriers received a substantial portion of DoD peacetime passenger and cargo business in return for their commitment to the CRAF program.

The experience of OPERATION DESERT SHIELD/DESERT STORM has caused many carriers to reevaluate their decision to participate in the CRAF. Despite the fact these carriers were paid for the missions they flew while activated, several carriers sustained millions of dollars in losses while they were supporting the war effort.[1]

Four key financial issues could threaten the future viability of the CRAF. These issues are increased foreign ownership of US airlines, loss of market share while participating in CRAF operations, declining peacetime financial incentives, and Title XIII war risk insurance. These issues will be examined in the following pages.

Foreign Ownership of US Airlines

All aircraft participating in the CRAF must be registered in the United States. Over the past several years, changes in tax laws, airline consolidations, and rapidly changing market conditions have resulted in shifts in airline ownership patterns.[2]

Foreign businesses have gained an increasing percentage of ownership of the US domestic airline industry. Until recently, foreign ownership was restricted to less than 25 percent. In 1991, Secretary of

Transportation Skinner redefined this policy. Foreign investors may now hold up to 49.9 percent of the total equity of any US airline.[3]

This change sparked sharp criticism from DoD. Diane K. Morales, Deputy Assistant Secretary of Defense for Logistics, summarized DoD's concerns with the following statement: "I don't believe any business organization, or carrier, would invest 49% in another carrier and not expect that level of control and not exert it."[4] Increased foreign influence could adversely impact a carrier's willingness to participate in the CRAF. For political or economic reasons, foreign investors may object to carriers participating in airlift missions supporting United States defense goals.

Loss of Market Share

When the CRAF was activated, many carriers suffered permanent damage in the marketplace. Aircraft were diverted from commercial service to military service during the height of the summer holiday season, one of the busiest travel periods of the year. This resulted in disgruntled customers and disrupted flight schedules.[5]

The US airline business was already suffering prior to the activation of the CRAF. Many foreign competitors took advantage of CRAF activation as an opportunity to increase their market share at the expense of US carriers. As US carriers responded to DoD's call for help, foreign carriers stepped in and picked up some of their domestic and international peacetime business. Many carriers claim they still have not recovered the market share lost while they fulfilled their CRAF commitments.[6]

Declining Peacetime Financial Incentives

The financial incentive for carriers to voluntarily participate in the CRAF is driven largely by the volume of DoD business received by these carriers during peacetime. The end of the Cold War has created a new dilemma that shakes the very foundation of the CRAF program.

Because of the reduction in the number of forward-deployed military units, the peacetime airlift business available as an incentive to CRAF participants will significantly decline. On the other hand, the need for airlift aircraft capable of deploying large forces anywhere in the world will undoubtedly increase as the amount of forward-deployed forces declines.

DoD is the airlines' largest single customer.[7] The magnitude of business these commercial air carriers receive annually from DoD is shown below:

DOD GENERATED COMMERCIAL AIRLINE BUSINESS[8]

YEAR	AMOUNT (MILLIONS)
FY84	$501
FY85	$544
FY86	$529
FY87	$622
FY88	$663
FY89	$618
FY90	$670
FY91	$1,800 (DESERT SHIELD/STORM)
FY92	$677
FY93 (Projected)	$440[9]
FY94 (Projected)	$420

As shown above, the amount of DoD peacetime airlift business available for commercial air carriers over the next few years is projected to decrease by about 40 percent.

Title XIII Insurance

A major financial concern facing CRAF carriers centers around the issue of war risk insurance. Many insurance companies either refuse to insure carriers or raise their premiums to unacceptably high levels if the carriers will be operating in areas of potential or increased hostility.

In 1958, Congress passed Title XIII of the Federal Aviation Administration (FAA) Act. This act allowed the Secretary of Transportation to provide insurance to carriers involved in international commerce if insurance was unavailable or offered only at unreasonable terms.[10] This insurance only provides liability for the aircraft hull and limits war risks only to overseas operations.

Title XIII does not cover three key areas of concern to carriers. Since Title XIII only applies to mission legs flown outside of the United States, it does not cover the domestic positioning and depositioning legs. Secondly, carriers must provide their own operational and logistical support to their aircraft and crews at foreign operating bases. Title XIII does not cover these operations. The Scud missile attacks on Saudi Arabia during OPERATION DESERT STORM that threatened ground operations would not have been covered under Title XIII. The final area not included under Title XIII is the life insurance policies for the aircrew.

To bridge this gap, Public Law 85-804 allows DoD to provide indemnification to protect carriers against many of these risks. Simply stated, this allows the carrier to file a claim against the government to pay for losses not covered by Title XIII insurance.[11]

As tensions increased in the Persian Gulf area, the Secretary of Transportation decided to consider Title XIII insurance on a case-by-case basis.[12] Even before the CRAF was activated, many insurance companies suspended their coverage for those aircraft flying into hostile areas. Many of these aircraft were supporting DoD airlift requirements and some ended up flying without any insurance coverage until Title XIII insurance was approved. If one of the aircraft had crashed, the impact could have been financially devastating.

Recognizing the need to streamline and simplify war risk insurance for carriers participating in the CRAF, DoD and DoT are currently working to amend Title XIII. The goal is to create a single government insurance program to cover CRAF aircraft throughout all its stages, mission segments, and ground activities.[13]

CHAPTER VIII: TWO PROMISING MEANS OF INCREASING INCENTIVES

The National Airlift Policy directs DoD and DoT to jointly develop policies and procedures to increase CRAF participation. Faced with declining financial incentives and the recent memory of how CRAF activation can adversely impact airline operations, some carriers are rethinking their decisions to participate in the CRAF.

Within the DoD, CINCTRANS serves as the executive agent for the CRAF program. In this capacity, USTRANSCOM is actively pursuing a wide range of initiatives to enhance the peacetime incentive for commercial air carriers to participate in the CRAF.

The easiest way to guarantee future CRAF participation would be for Congress to pass legislation requiring the airlines to participate! Needless to say, this option would be strongly resisted by the airline industry and it would undermine the voluntary relationship that has existed between DoD and the airlines since 1952.

The ultimate success or failure of the voluntary CRAF program depends on the strength of the peacetime financial incentives. Since participation in the CRAF is not without cost or risk to the carriers, they must see the benefits of participating.[1]

Linking All Government Air Transportation to the CRAF Program

At present, only DoD international passenger and cargo traffic are positively linked to the CRAF incentive program. Travel for other agencies of the federal government is not under the "CRAF umbrella." Neither is domestic travel for any government agency, including DoD. Within the continental United States, more than $700 million is spent

annually by DoD and other government agencies for domestic travel between cities.[2]

The Military Traffic Management Command, the Army component of USTRANSCOM, is currently working with the General Services Administration and the commercial carriers to link all foreign and domestic travel performed by US government employees to the CRAF incentive program.

This policy change could be directed by the President with an executive order to all federal agencies. Increasing the peacetime business under the "CRAF umbrella" could provide a strong financial incentive for carriers to continue voluntary participation in the CRAF.

Commercial Use of Military Airfields

Commercial aircraft have to pay landing fees each time they land at civilian airfields. Some commercial carriers, especially cargo carriers, have expressed interest in using military airfields on a noninterference basis. Advocates argue that this would also relieve congestion at major airports.[3] At present, commercial aircraft are only permitted to land at military airfields when there is a military requirement on board, or during an emergency. Legislation would be required in order to allow commercial carriers to stop at military fields for other than a military requirement.

USTRANSCOM has examined the possibility of establishing contractual agreements between DoD and CRAF carriers to allow access for commercial activities. The Secretary of Defense has endorsed this proposal and draft legislation is currently being reviewed by the Joint Staff and military departments.[4]

CHAPTER IX: RECOMMENDATIONS AND CONCLUSIONS

USTRANSCOM has taken positive steps in applying the "lessons-learned" from OPERATION DESERT SHIELD/DESERT STORM. Restructuring the cargo/passenger mix in Stages I and II and refining the activation/release procedures for aircraft called into CRAF service will benefit both DoD and the commercial carriers. DoD will now be able to acquire more of the critically-needed cargo capacity in the earlier stages of the CRAF and commercial carriers will benefit by having their aircraft more efficiently utilized following activation. By formalizing procedures for aircraft to be temporarily released back to the carriers during periods of slower defense airlift requirements, carriers will be able to continue revenue-generating flights. This will help reduce the adverse financial impact on the CRAF participants.

DoD and USTRANSCOM have also made substantial progress in improving the Title XIII insurance program. Although legislation has not yet been passed by Congress, all parties involved--DoD, FAA, and the commercial air carriers--feel this issue will be resolved. Removing this disincentive will reduce the carriers' financial exposure while fulfilling CRAF commitments.

DoD should press for an executive order to positively link the passenger and cargo business of <u>all</u> US government agencies to the CRAF. <u>This single initiative has tremendous potential not only to maintain, but to actually increase, the financial incentives for CRAF participation.</u>

Careful consideration should also be given to allowing civilian air carriers freer access to military bases on a noninterference basis.

This could prove to be a significant incentive for some of the cargo carriers such as Federal Express, Evergreen International, and United Parcel Service. Dual use could serve to strengthen the partnership between DoD and commercial cargo carriers while reducing the operating costs for some of the financially strapped cargo airlines.

The policy change allowing increased foreign ownership of US carriers needs to be revisited at the inter-agency level. According to the Deputy Assistant Secretary of Defense for Logistics, DoD had less than 24-hours notice of the policy change that now permits foreign ownership to increase from 24.9 percent to 49.9 percent.[1] Both DoT and DoD are tasked by the National Airlift Policy with responsibility for maintaining the national airlift capability of the United States. Unilateral decisions of this magnitude could undermine the intent of the National Airlift Policy and ultimately reduce the effectiveness of the CRAF.

Loss of market share during CRAF activation is one issue that may not be possible to resolve. Northwest Airline's executive vice president for operations, William D. Slattery, wants to see competition from the airlines of allied countries limited during periods of CRAF activation.[2] This type of "protectionism" would be inconsistent with the current US policy goal of reducing foreign trade barriers. Although this may be a market risk that CRAF participants have to accept, a strong peacetime incentive program could provide the financial motivation for carriers to willingly overlook this risk.

Although some problems still remain, the CRAF carriers have responded positively to the lead taken by USTRANSCOM in addressing their

concerns. CRAF contracts were renewed on 1 October 1992 and carrier response exceeded USTRANSCOM's expectations.[3] The cargo and passenger capability of the CRAF has not declined as a result of OPERATION DESERT SHIELD/DESERT STORM.

For 38 years, CRAF was a concept that existed only on paper. The successful activation during OPERATION DESERT SHIELD/DESERT STORM clearly highlighted both the need for and the capability of this partnership. From the perspective of the commercial carriers, "Pandora's Box" has now been opened. In any future contingency requiring a large deployment of combat forces, the warfighting CINCs will undoubtedly count on the CRAF's civilian fleet.

The reduction of forward-deployed forces will increase the warfighting CINCs reliance on strategic mobility. Without CRAF participation, longer periods of time will be required to deploy forces. From the perspective of the warfighting CINC, this extra time translates into increased risk due to the slower deployment of combat forces.

The continued viability of the CRAF program depends on how aggressively the President, Congress, DoD, and USTRANSCOM pursue options to maintain a strong peacetime financial incentive program while simultaneously minimizing the disincentives for voluntary CRAF participation.

> "The National Airlift Policy continues to be the foundation for strategic airlift support of US military strategy. DoD's partnership with the air carrier industry, through the Civil Reserve Air Fleet, remains a vital part of the US military airlift capability required to implement the National Airlift Policy."[4]

APPENDIX 1: NATIONAL AIRLIFT POLICY

THE WHITE HOUSE

WASHINGTON

June 24, 1987

NATIONAL SECURITY DECISION
DIRECTIVE NUMBER 280

NATIONAL AIRLIFT POLICY

The United States' national airlift capability is provided from military and commercial air carrier resources. The national defense airlift objective is to ensure that military and civil airlift resources will be able to meet defense mobilization and deployment requirements in support of US defense and foreign policies. Military and commercial resources are equally important and interdependent in the fulfillment of this national objective.

Our basic national security strategy recognizes the importance of strategic lift, and the need to reduce current shortfalls. The broad purpose of this directive is to provide a framework for implementing actions in both the private and public sectors that will enable the US efficiently and effectively to meet established requirements for airlift in both peacetime and in the event of crisis or war. Toward this end, the following policy guidelines are established:

1. United States policies shall be designed to strengthen and improve the organic airlift capability of the Department of Defense and, where appropriate, enhance the mobilization base of the U. S. commercial air carrier industry. A U. S. commercial air carrier is an air carrier holding a certificate issued pursuant to section 401 of the Federal Aviation Act of 1958, as amended.

2. The goal of the United States Government is to maintain in peacetime organic military airlift resources, manned, equipped, trained and operated to ensure the capability to meet approved requirements for military airlift in wartime, contingencies, and emergencies. Minimum utilization rates shall be established within the Department of Defense which provide for levels of operation and training sufficient to realize this goal.

3. The Department of Defense shall determine which airlift requirements must move in military aircraft manned and operated by military crews because of special military considerations, security, or because of limiting physical characteristics such as size, density, or dangerous

properties: and which airlift requirements can be appropriately fulfilled by commercial air carriers.

4. The commercial air carrier industry will be relied upon to provice the airlift capability required beyond that available in the organic military airlift fleet. It is therefore the policy of the United States to recognize the interdependence of military and civilian airlift capabilities in meeting wartime airlift requirements, and to protect those national security interests within the commercial air carrier industry.

5. During peacetime, Department of Defense requirements for passenger and/or cargo airlift augmentation shall be satisfied by the procurement of airlift from commercial air carriers participating in the Civil Reserve air Fleet program, to the extent that the Department of Defense determines that such airlift is suitable and responsive to the military requirement. Consistent with the requirement to maintain the proficiency and operational readiness of organic military airlift, the Department of Defense shall establish the appropriate levels for peacetime cargo airlift augmentation in order to promote the effectiveness of the Civil Reserve Air Fleet and provide training within the military airlift system.

6. Short-term airlift capability required to meet contingency requirements which might be considered minor surges shall be provided by increased utilization of aircraft in the organic sector, as well as by the increased utilization of the commercial air carriers regularly providing service to the Department of Defense.

7. United States Government policies should provide a framework for dialogue and cooperation with our national aviation industry. It is of particular importance that the aviation industry be apprised by the Department of Defense of long-term requirements for airlift in support of national defense. The Department of Defense and the Department of Transportation shall jointly develop policies and programs to increase participation in the Civil Reserve Air Fleet and promote the incorporation of national defense features in commercial aircraft. Government policies should also support research programs which promote the development of technologically advanced transport aircraft and related equipment.

8. The Department of State and other appropriate agencies shall ensure that international agreements and federal policies and regulations governing foreign air carriers foster fair competition, safeguard important U. S. economic rights, and protect U. S. national security interests in commercial cargo capabilities. Such agencies should also promote among U. S. friends and allies an appreciation of the importance of intercontinental airlift and other transportation capabilities, and work to obtain further commitments from such countries and foreign air carriers in support of our mutual security interests.

9. United States aviation policy, both international and domestic, shall be designed to strengthen the nation's airlift capability and where appropriate promote the global position of the United States aviation industry.

The Department of State, the Department of Defense, the Department of Commerce, the Department of Transportation, the Federal Emergency Management Agency, and the National Aeronautics and Space Administration shall provide leadership within the executive branch in implementing these objectives.

This directive replaces the Presidentially approved Courses of Action contained in the February 1960 Department of Defense study, The Role of Military Air Transport Service in Peace and War.

APPENDIX 2: GENERAL CRAF ELIGIBILITY REQUIREMENTS
(Extracted from AMCR 55-8)

1. Must be US-registered civil transport aircraft.

2. Minimum cockpit crew to aircraft ratio of 4 to 1 for LRI, SRI, and aeromedical segments.

3. Cockpit crews must be US citizens and eligible for a secret clearance.

4. Carrier personnel with military Reserve or National Guard commitments will not be considered in the 4:1 crew ratio.

5. Minimum range requirements specified for:
SRI - 1500 NM
LRI - 3500 NM

6. LRI aircraft must be equipped and maintained with the navigation, communications, and survival equipment for worldwide extended overwater operations.

7. Enroute maintenance, logistics, and command and control provided by the carrier through Senior Lodger system.

8. Cargo aircraft must be compatible with military 463L pallets (except for Alaskan CRAF).

APPENDIX 3: CURRENT CRAF PARTICIPANTS
(As of 1 January 1993)

DOMESTIC SEGMENT	ALASKAN SEGMENT	AEROMEDICAL SEGMENT
Southern Air Transport	Northern Air Cargo	Delta Airlines
	Reeve Aleutian	Trans World Airlines
	Markair	US Air

SHORT-RANGE INTERNATIONAL SEGMENT

PASSENGER CARRIERS	CARGO CARRIERS
American Trans Air	Evergreen International
Evergreen International	Express One
Express One	
Private Jet Expeditions	
Sun Country	
Trans World Airlines	

LONG-RANGE INTERNATIONAL SEGMENT

PASSENGER CARRIERS	CARGO CARRIERS
American Airlines	American International
American Trans Air	Air Trans International
Buffalo Airways	Arrow Air
Continental Airlines	Burlington Airs
Delta Airlines	Buffalo Airways
Hawaiian Airlines	Emery Worldwide
Northwest Airlines	Evergreen International
Rich International Airways	Federal Express
Tower Air	Florida West
United Airlines	Northwest Airlines
World Airways	Southern Air Transport
	Tower Air
	Zantop International

APPENDIX 4: CRAF PARTICIPANTS IN THE LONG-RANGE INTERNATIONAL SEGMENT
(As of 1 January 1993)

CARRIER	NUMBER OF AIRCRAFT COMMITTED TO EACH SEGMENT					
	STAGE I		STAGE II		STAGE III	
	CARGO	PAX	CARGO	PAX	CARGO	PAX
Air Trans International	1		2		4	
American Airlines						1
American International	3		8		16	
American Trans Air		2		4		16
Arrow Air	1		3		7	
Buffalo Airways	1	1	1	1	2	1
Burlington Air	1		1		2	
Continental Airlines		3		7		25
Delta Airlines		4		10		37
Evergreen International	3		8		16	
Emery Worldwide	4		11		21	
Federal Express	7		23		46	
Florida West	1		2		4	
Hawaiian Airlines		2		3		10
Northwest Airlines	2	6	4	20	8	71
Rich International Airways		1		1		4
Southern Air Transport	1		3		6	
Tower Air	1	1	1	2	2	6
Trans World Airways		2		4		12
United Airlines		7		22		77
United Parcel Service	1		2		4	
World Airways	2	1	5	1	9	2
Zantop International	1		1		1	
TOTALS	30	30	75	75	148	262

LONG-RANGE INTERNATIONAL SUMMARY

	CARGO	PASSENGER	TOTAL
STAGE I	30	30	60
STAGE II	75	75	150
STAGE III	148	262	410

APPENDIX 5: SUMMARY OF AIRCRAFT BY CRAF SEGMENT

MOST RECENT CRAF SUMMARY
(Current as of 1 January 1993)

SEGMENT	NUMBER OF AIRCRAFT COMMITTED		
	STAGE I	STAGE II	STAGE III
DOMESTIC		7	7
ALASKAN		12	12
AEROMEDICAL		13	13
SHORT-RANGE INTERNATIONAL		33	33
LONG-RANGE INTERNATIONAL (PAX)	30	75	262
LONG-RANGE INTERNATIONAL (CARGO)	30	75	148
TOTAL	60	215	475

TOTAL LRI PAX CAPACITY	139.53 MILLION PAX MILES
TOTAL LRI CARGO CAPACITY	17.52 MILLION TON MILES

CRAF SUMMARY JUST PRIOR TO OPERATION DESERT STORM
(Current as of 1 July 1990)

SEGMENT	NUMBER OF AIRCRAFT COMMITTED		
	STAGE I	STAGE II	STAGE III
DOMESTIC		44	44
ALASKAN		4	4
AEROMEDICAL			31
SHORT-RANGE INTERNATIONAL		23	34
LONG-RANGE INTERNATIONAL (PAX)	18	77	252
LONG-RANGE INTERNATIONAL (CARGO)	22	39	141
TOTAL	40	187	506

TOTAL LRI PAX CAPACITY	146.66 MILLION PAX MILES
TOTAL LRI CARGO CAPACITY	17.37 MILLION TON MILES

APPENDIX 6: CRAF'S CONTRIBUTION TO OPERATION DESERT SHIELD/ DESERT STORM

(Based on AFP 76-2 Methodology)

Note: Since both C-5s and C-141s were involved, average block speeds and ground times were used to represent combination of both types of aircraft.

1. COMPUTATION OF UNADJUSTED CYCLE TIME
   (ASSUMES AVERAGE BLOCK SPEED OF 400 NM/HR)
   (ASSUMES AVERAGE UPLOAD TIME OF 3+00)
   (ASSUMES AVERAGE DOWNLOAD TIME OF 2+45)

ROUTE	DISTANCE (NM)	FLIGHT TIME (HRS)	GROUND TIME (HRS)
			3+00
McGuire-Ramstein	3545	8+55	2+15
Ramstein-Dhahran	2914	7+20	2+45
Dhahran-Torrejon	3137	7+50	2+15
Torrejon-McGuire	3270	8+10	----
		32+15	10+15

CYCLE TIME = ROUND TRIP FLIGHT TIME + GROUND TIME
= 32+15 + 10+15
= 42+30 HOURS

---

2. ADJUSTED CYCLE TIME

Note: Based on an average utilization rate of 10 hours per day, the cycle time has to be adjusted to reflect the average time it would take for an aircraft to complete the cycle.

ADJUSTED CYCLE TIME = (RTFT * 24 HOURS)/AVERAGE UTE RATE
= (32+15 * 24)/10
= 77.4 HOURS

---

3. COMPUTING THE TOTAL NUMBER OF AIRCRAFT SORTIES AVAILABLE EACH DAY

234 C-141S * 90% = 210---------->210 C-141 Equivalents
126 C-5S * 95% = 120---------->360 C-141 Equivalents

570 C-141 Equivalents/day

Note: Although 570 C-141 equivalents are available for the flow, the adjusted cycle time determines the number of sorties per day.

AIRCRAFT SORTIES PER DAY = (570 * 24 HOURS)/ADJUSTED CYCLE TIME
= (570 * 24 HOURS)/77.4 HOURS
= 177 C-141 EQUIVALENT SORTIES/DAY

---

4. AVERAGE C-141 PAYLOADS FOR A 3.500 NM LEG

MIXED LOAD	PASSENGER ONLY MODE
20.3 TONS OF CARGO	143 PASSENGERS
22 PASSENGERS	

DEPLOYMENT PHASE

5. COMPUTATION OF C-141 SORTIES REQUIRED

Note: A total of 134,000 tons of cargo and 306,000 passengers were delivered during the deployment phase.

MIXED SORTIES = 134,000 TONS/(20.3 TONS/ACFT) = 6601 SORTIES

PASSENGERS CARRIED ON MIXED SORTIES = (22 PAX/SORTIE) * 6601 SORTIES
= 145,222 PASSENGERS

PASSENGERS REMAINING = 306,000 - 145,222 = 160.778

PASSENGER ONLY SORTIES = 160,778 PASSENGERS/(143 PAX/SORTIE)
= 1125 SORTIES

TOTAL SORTIES REQUIRED = MIXED SORTIES + PAX ONLY SORTIES
= 6601 + 1125
= 7726 SORTIES

6. DAYS REQUIRED FOR CLOSURE

CLOSURE = TOTAL SORTIES REQUIRED/(SORTIES AVAILABLE/DAY)
= 7726 SORTIES/(177 SORTIES/DAY)
= 44 DAYS

REDEPLOYMENT PHASE

Note: A total of 709,000 passengers and 700,000 tons of cargo were delivered by commercial/military air during the entire period of CRAF activation. Since 306,000 passengers and 134,000 tons of cargo were delivered during the deployment phase (plus the 43 days of the war). this left 484,000 passengers and 566,000 tons of cargo for the redeployment phase. Commercial air moved 87% of the passengers and 43% of the cargo during the redeployment phase. Therefore, commercial air redeployed a total of approximately 421,080 passengers and 243,380 tons of cargo.

5. COMPUTATION OF C-141 SORTIES REQUIRED

MIXED SORTIES = 243,380 TONS/(20.3 TONS/ACFT) = 11,975 SORTIES

PASSENGERS CARRIED ON MIXED SORTIES= (22 PAX/SORTIE) * 11,975 SORTIES
= 263,450 PASSENGERS

PASSENGERS REMAINING = 421,080 - 263,450 = 157,650

PASSENGER ONLY SORTIES = 157,650 PASSENGERS/(143 PAX/SORTIE)
= 1103 SORTIES

TOTAL SORTIES REQUIRED = MIXED SORTIES + PAX ONLY SORTIES
= 11,975 + 1103
= 13,078 SORTIES

6. DAYS REQUIRED FOR CLOSURE

CLOSURE = TOTAL SORTIES REQUIRED/(SORTIES AVAILABLE/DAY)
= 13,078 SORTIES/(177 SORTIES/DAY)
= 74 DAYS

CIVIL RESERVE AIR FLEET (CRAF) CAPABILITY SUMMARY

SOURCE: HQ AMC/ XOC

AS OF: 1 January 1993

CAPABILITY

TYPE	STAGES II	STAGES III
DOMESTIC CARGO CAPABILITY *(MTM)*	0.37	0.37
ALASKAN CARGO CAPABILITY *(MTM)*	0.53	0.53
SHORT-RANGE INTERNATIONAL CARGO CAPABILITY *(MTM)*	0.17	0.17
SHORT RANGE INTERNATIONAL PASSENGER CAPABILITY *(MPM)*	5.02	5.02

DOMESTIC SEGMENT

AIRLINE AND CRAF STAGE	So Air Tran (SJM)												TOTAL		Northern Air Cargo (NAC)		Reeve Aleutian (RVV)		Markair (MRK)		TOTAL	
AIRCRAFT TYPE	I	II	III	I	II	III	I	II	III	I	II	III	II	III	II	III	II	III	II	III	II	III
L382G (L100)		7	7										7	7								
DC6															2	2					2	2
L188																	2	2			2	2
DHC8-300																			2	2	2	2
B737-200C																			6	6	6	6
DC9-83																						
B727-100F																						
B727-100/200																						
TOTALS		7	7										7	7	2	2	2	2	8	8	12	12

SHORT RANGE INTERNATIONAL SEGMENT

AIRLINE AND CRAF STAGE	American Trans Air (AMT) TA-1			Evergreen Int'l (EIA) TA-2		Express One (XOX)			Private Jet Exp (PJE)		Sun Country (SCK) TA-2		TransWorld Airlines (TWA)		TOTAL	
AIRCRAFT TYPE	II	III		II	III	II	III		II	III	II	III	II	III	II	III
L382G (L100)																
DC6																
L188																
DHC8-300																
B737-200C													4	4	4	4
DC9-83																
B727-100F				2	2	2	2								4	4
B727-100/200	7	7		1	1	5	5		2	2	6	6	4	4	25	25
TOTALS	7	7		3	3	7	7		2	2	6	6	8	8	33	33

LONG RANGE INTERNATIONAL SEGMENT

PAX

AIRLINE AND CRAF STAGE	American Airlines (AAL)			Delta Air Lines (DAL)			Buffalo Airways (BVA)			Hawaiian Airlines (HAL)			Trans World Airlines (TWA)		
AIRCRAFT TYPE	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
DC8-61/62/63							1	1	1	2	3	6			
A310-324						12									
B747-SP															
B747-100													1	3	8
B747-200/400													1	1	1
B757-200															
B767-300ER				3	3	3									
DC10-10/30/40			1												
L1011-1/50/100												4			3
L1011-250/500				1	7	22									
TOTALS			1	4	10	37	1	1	1	2	3	10	2	4	12

AIRLINE AND CRAF STAGE	American Trans (AMT) TA-1			Continental (COA) TA-1			Northwest (NWA) TA-1								
AIRCRAFT TYPE	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
DC8-61/62/63															
A310-324															
B747-SP															
B747-100					2	2			12						7
B747-200/400				3	5	5	6	20	30						6
B757-200			6												
B767-300ER						18			29						
DC10-10/30/40	2	4	10												
L1011-1/50/100															
L1011-250/500															
TOTALS	2	4	16	3	7	25	6	20	71						13

CARGO

AIRLINE AND CRAF STAGE	Arrow Air (APW)			Air Trans Int'l (ATN)			Buffalo Airways (BVA)			Florida West (FWL)			Zantop Int'l (ZAN)		
AIRCRAFT TYPE	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
DC8-50F													1	1	1
DC8-60F	1	3	7	1	2	4									
DC8-70F															
B707-300C							1	1	2	1	2	4			
B747-100F															
B747-200F															
DC10-10F															
DC10-30F															
DC10-30C															
MD-11F															
TOTALS	1	3	7	1	2	4	1	1	2	1	2	4	1	1	1

AIRLINE AND CRAF STAGE	Federal Expr (FDX) TA-1			Southern Air (SJM) TA-1			Northwest (NWA) TA-1								
AIRCRAFT TYPE	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
DC8-50F															
DC8-60F															
DC8-70F				1	2	2									
B707-300C					1	4									
B747-100F															
B747-200F	7	8	8				2	4	8						
DC10-10F			11												
DC10-30F		7	19												
DC10-30C															
MD-11F		8	8												
TOTALS	7	23	46	1	3	6	2	4	8						

AEROMEDICAL EVACUATION SEGMENT

AIRLINE AND CRAF STAGE	Delta Air Lines (DAL)		Trans World Airlines (TWA)		US Air (USA)						TOTAL IN EACH STAGE	
AIRCRAFT TYPE	II	III	II	III	II	III	II	III	II	III	II	III
B767-200			5	5	2	2					7	7
B762-332ER	6	6									6	6
TOTALS	6	6	5	5	2	2					13	13

AEROMEDICAL EVACUATION CAPABILITY STAGE I = 5.19 STAGE II = 5.19

LONG-RANGE CAPABILITY	STAGES I	STAGES II	STAGES III
TOTAL PASSENGER CAPABILITY (MPM)	19.36	50.23	139.53
NARROW BODY CARGO CAPABILITY *(MTM)*	0.90	2.29	4.79
WIDE BODY CARGO CAPABILITY *(MTM)* — OVERSIZE	1.85	3.48	7.00
WIDE BODY CARGO CAPABILITY *(MTM)* — COMBINATION	3.38	7.20	12.73
TOTAL CARGO CAPABILITY (MTM)	4.28	9.99	17.52

PAX

AIRLINE AND CRAF STAGE				Rich Int'l Awys (RIA) TA-2			World Airways (WOA) TA-2						Tower Air (TOW) TA-3			United Airline (UAL) TA-3		
AIRCRAFT TYPE	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
DC8-61/62/63				1	1	2												
A310-324																		
B747-SP																		10
B747-100													1	2	6			18
B747-200/400																7	22	27
B757-200																		
B767-300ER																		
DC10-10/30/40							1	1	2									
L1011-50/100						2												22
L1011-250/500																		
TOTALS				1	1	4	1	1	2				1	2	6	7	22	77

CONFIGURATION	TOTAL EACH STAGE I	TOTAL EACH STAGE II	TOTAL EACH STAGE III
PN	4	5	9
PW			12
PW			10
PW			18
PW	2	7	46
PW	17	48	63
PN			6
PW	3	3	3
PW	1	1	72
PW	2	4	19
PW	1	7	22
	30	75	262

CARGO

AIRLINE AND CRAF STAGE	Evergreen (EIA) TA-2			Emery World (EWW) TA-2			World Airways (WOA) TA-2						Burlington Air (BAX) TA-3			American Int'l (CKS) TA-3		
AIRCRAFT TYPE	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
DC8-50F																		8
DC8-60F			1		4	14							1	1	2		5	5
DC8-70F			2	4	7	7												
B707-300C																		
B747-100F		4	9													3	3	3
B747-200F	3	4	4															
DC10-10F																		
DC10-30F																		
DC10-30C							2	5	9									
MD-11F																		
TOTALS	3	8	16	4	11	21	2	5	9				1	1	2	3	8	16

CONFIGURATION	TOTAL EACH STAGE I	TOTAL EACH STAGE II	TOTAL EACH STAGE III
FN	1	1	9
FN	3	15	33
FN	5	9	11
CN	2	4	10
FW	4		17
FW	13	17	21
FW			11
FW		7	19
CW	2	5	9
FW		8	8
	30	75	148

LONG-RANGE INTERNATIONAL GRAND TOTALS	60	150	410

SUMMARY OF SEGMENTS	STAGES I	STAGES II	STAGES III
DOMESTIC		7	7
ALASKAN		12	12
SHORT-RANGE INTERNATIONAL		33	33
LONG-RANGE INTERNATIONAL *(PAX)*	30	75	267
LONG RANGE INTERNATIONAL *(CARGO)*	30	75	148
AEROMEDICAL EVACUATION		13	13
TOTAL CRAF	60	215	479

NOTES:

Configuration: C - Convertible, F - Freighter, P - Passenger, W - Wide Body, N - Narrow Body

Capability reflected in millions of ton or passenger miles (MTM or MPM) per day

Cargo capability based on combination of bulk and oversize

○ Indicates changes since previous capability summary.

REMARKS

This summary is in accordance with the Air Mobility Command's FY 93 Airlift Services Contract.

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